

CURRICULUM VITAE

BARBARA RITA ALEVRIADOU, Ph.D.**PERSONAL INFORMATION:**

Date of Birth:	June 5, 1963	
Place of Birth:	Thessaloniki, Greece	
Citizenship:	U.S.A.	
Home Address:		Business Address:
5400 Davenport Lane		The Ohio State University
Dublin, OH 43016		610 Davis Heart & Lung Research Institute
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Married (Stelios K. Kyriacou, Ph.D.) with 1 child (Georgia A. Kyriacou)

EDUCATION:

- 7/1986 **Diploma of Chemical Engineering**
Aristotle University, Thessaloniki, Greece
Thesis title: "Mass Transfer and Hydrodynamic Parameters in Packed Beds with Downward Cocurrent Gas-Liquid Flow"
Advisor: Anastasios J. Karabelas, Ph.D.
Cumulative GPA: 9.4/10.0 Rank: top 3%
- 5/1989 **M.S., Chemical Engineering**
Bioengineering and Biosciences Institute, Rice University, Houston, TX
Thesis title: "Effect of Shear Stress on ⁸⁶Rb⁺ Efflux of Calf Pulmonary Artery Endothelial Cells"
Advisor: Larry V. McIntire, Ph.D.
Cumulative GPA: 4.0/4.0
- 5/1992 **Ph.D., Chemical Engineering**
Bioengineering and Biosciences Institute, Rice University, Houston, TX
Thesis title: "Interaction of Platelets in Flowing Blood with Collagen-Coated Surfaces: Effect of Inhibitors of Platelet Function or von Willebrand Factor Binding Domains"
Advisor: Larry V. McIntire, Ph.D.
Cumulative GPA: 4.0/4.0

PROFESSIONAL EXPERIENCE:

- 6-8/1983 **Intern**, Ethyl Hellas Co., Thessaloniki, Greece
- 6-8/1984 **Intern**, S.I.C.N.G. Chemical Fertilizer Co., Thessaloniki, Greece
- 6-8/1985 **Summer Undergraduate Research Assistant**, Department of Chemical Engineering, Twente University of Technology, Enschede, Netherlands
- 9/1985-6/1986 **Undergraduate Research Assistant**, Department of Chemical Engineering, Aristotle University, Thessaloniki, Greece

- 8/1986-6/1992 **Graduate Research Assistant**, Department of Chemical Engineering, Bioengineering and Biosciences Institute, Rice University, Houston, TX
Investigated the role of von Willebrand factor interactions with platelet glycoproteins (GP) Ib and $\alpha_{IIb}\beta_3$ (GP IIb/IIIa) in supporting platelet thrombus formation from flowing blood onto collagen-coated surfaces using perfusion chambers and epifluorescence video microscopy (Ph.D. research). Investigated the effect of flow-induced shear stress on membrane K^+ permeability of cultured vascular endothelial cells (M.S. research).
- 7/1992-8/1993 **Research Associate**, Department of Molecular and Experimental Medicine, Committee on Vascular Biology, The Scripps Research Institute, La Jolla, CA
Supervisor: Zaverio M. Ruggeri, M.D.
Investigated the inhibitory effects of recombinant von Willebrand factor fragments on platelet thrombus formation on subendothelial matrices under flow conditions. Acquired experience in analysis of proteins, immunoassays, transfection of DNA into mammalian cells, and confocal microscopy.
- 9/1993-9/2003 **Assistant Professor**, Department of Biomedical Engineering, The Johns Hopkins University School of Medicine, Baltimore, MD
Joint appointment with Department of Chemical Engineering, The Johns Hopkins University, Baltimore, MD
Director, Vascular Bioengineering Laboratory
Investigated the molecular basis of platelet adhesion and thrombus formation/dissolution from flowing blood onto fibrin surfaces in the presence of fibrinolytic agents, such as streptokinase, urokinase, recombinant tissue-type plasminogen activator (rt-PA) and t-PA variants. Assessed the effect of the Fab fragment of the anti- $\alpha_{IIb}\beta_3$ monoclonal antibody c7E3 (ReoPro; abciximab) on the lytic efficacy of rt-PA under flow conditions (funded by NIH First Award).
Determined the dynamic changes in intracellular reactive oxygen species (ROS) of vascular endothelial cells (ECs) exposed to steady laminar shear stress (step). Provided evidence that the small GTPase Rac1, via activation of the plasma membrane-bound NADPH oxidase, results in ROS production and this mediates the increase in cellular, and mitogen-activated protein (MAP) kinase, tyrosine phosphorylation. Shear stress also activates the enzyme that synthesizes the glycosphingolipid lactosylceramide which activates NADPH oxidase (funded by a Whitaker Foundation research grant).
Studied the redox status of cultured ECs after exposure to hypoxia (H)/reoxygenation (RO) and clarified the molecular mechanisms of blood monocyte adhesion to H/RO-exposed ECs under flow. Also quantified monocyte adhesion to E-selectin-coated surfaces of a 3-D perfusion model (funded by the Whitaker Foundation-4th year extension grant and the Center for Alternatives to Animal Testing).
- 10/2003- **Associate Professor**, Biomedical Engineering Center and Internal Medicine (Cardiology), The Ohio State University, Columbus, OH
Member, Davis Heart & Lung Research Institute, The Ohio State University, Columbus, OH
Director, Vascular Bioengineering Laboratory

RESEARCH INTERESTS:

- ❖ Role of hemodynamic forces, blood cell receptors and plasma proteins (in particular, fibrinogen and the complement cascade) in thrombosis (platelet adhesion/aggregation) and inflammation (leukocyte-EC adhesion)
- ❖ Role of hemodynamic shear stress and/or oxidative stress in EC signal transduction, gene expression and protein synthesis

- ❖ Design of in vitro systems to mimic the hemodynamic environment in vascular health and disease (eg. to simulate the EC dysfunction after ischemia/reperfusion or heart transplantation)

PROFESSIONAL SOCIETIES:

- Session Chair :** Summer Bioengineering Conference, 1995
(or co-Chair) BMES Annual Meeting, 1995 and 1996
 Experimental Biology Annual Meeting, 1996
 Summer Bioengineering Conference, 1997
 BMES Annual Meeting, 1998, 1999, 2002 and 2003
- Track co-Chair:** BMES Annual Meeting (Cellular & Biomolecular Engineering, with Douglas A. Lauffenburger), 1998
 BMES Annual Meeting (Cellular Engineering II, with George A. Truskey), 2000
- Symposium co-Chair:** BMES Annual Meeting (Hemorheology in Thrombosis, Coagulation and Fibrinolysis under Cardiovascular Engineering, with Vincent T. Turitto), 2001
- Grant Reviewer:** NIH/NHLBI (ad-hoc; Surgery & Bioengineering Study Section, 2002-present)
 NIH/NHLBI (ad-hoc; SBIR/STTR Study Section)
 NSF (ad-hoc; Bioengineering)
- NIH/NHLBI (since October 2003:
 Member; Surgery & Bioengineering Study Section)
- Journal Reviewer:** American Journal of Physiology: Cell Physiology (and Editorial Board Member)
 American Journal of Physiology: Lung Cellular & Molecular Physiology
 Arteriosclerosis, Thrombosis and Vascular Biology
 Critical Research in Toxicology
 Annals of Biomedical Engineering
 ASME Journal of Biomechanical Engineering
 Computers and Fluids
 Microvascular Research
 Journal of Investigative Medicine
- Member:** Biomedical Engineering Society (BMES)
 American Institute of Chemical Engineers (AIChE)
 North American Vascular Biology Organization (NAVBO)
 Phi Lambda Ypsilon, Honorary Chemical Society

HONORS:

- 1983-1986 Technical Chamber of Greece Award for Undergraduate Academic Excellence
 1986-1992 Graduate Fellowship from the Robert A. Welch Foundation, Rice University
 1992 1st Prize, 1992 Graduate Student Symposium, Rice University
 2001 Who's Who in Fluids and Flow Engineering

GRANT AWARDS:

Current:

Reperfusion-Induced Endothelial Cell Dysfunction

Principal Investigator: B. Rita Alevriadou, Ph.D.

Agency: NIH/NHLBI

Type: R01 (HL67027) 12/01/01 - 11/30/06

Total direct costs: \$1,000,000

% effort: 60

The goal of this project is to understand the role of endogenous ROS on EC dysfunction/survival under conditions where changes in both fluid flow and oxygen tension occur (ischemia/reperfusion).

Mechanisms of Accelerated Graft Arteriosclerosis

Principal Investigator: William M. Baldwin III, M.D., Ph.D.

Agency: NIH/NHLBI

Type: P01 06/01/03-05/31/07

Total direct costs: \$6,000,000 % effort: 10

The goal of this project is to identify the role of complement (C) in the pathogenesis of accelerated graft arteriosclerosis, by testing the hypothesis that C mediates activation of macrophages in organ transplants.

Previously Funded:

Regulation of Endothelial Hemostatic Properties by Flow-Induced Shear Stress

Principal Investigator: B. Rita Alevriadou, Ph.D.

Agency: The Whitaker Foundation

Type: Research Grant 04/01/95 - 03/31/98

Total direct costs: \$150,721 % effort: 33

The goal of this project was to investigate the signal transduction mechanisms of mechanical forces (cellular tyrosine phosphorylation) and the modulation of cell properties by shear stress, with particular emphasis on the regulation of protein synthesis for antithrombotic proteins.

Effect of Flow and Female Hormones on Vascular Cells

Principal Investigator: B. Rita Alevriadou, Ph.D.

Agency: The Johns Hopkins School of Medicine

Type: Institutional Research Grant Project 7/1/95 - 6/30/96

Total direct costs: \$10,000 % effort: N/A

The aim was to perform preliminary studies in order to understand the intracellular signal transduction of cultured vascular ECs while in the presence of exogenous estrogen and under arterial level shear stress.

Hemostatic Effects of Fibrinolytic Therapy

Principal Investigator: B. Rita Alevriadou, Ph.D.

Agency: NIH/NHLBI

Type: R29 (HL54089) 12/01/95 - 11/30/00

Total direct costs: \$349,985 % effort: 50

The aim of this project was to define the thrombolytic potential and hemostatic consequences of fibrinolytic agents (rt-PA, t-PA mutants) under in vitro conditions that mimic blood flow in a vessel.

In Vitro Evaluation of Pharmacological Interventions Aimed to Prevent Atherosclerosis

Principal Investigator: B. Rita Alevriadou, Ph.D.

Agency: The Center for Alternatives to Animal Testing

Type: Research Grant 02/01/96 - 01/31/98

Total direct costs: \$47,907 % effort: 5

The goal of this project was to understand the relative contribution of changes in EC properties to the adhesive interactions between leukocytes (monocytes) and ECs in the early stages of atherosclerosis.

Platelet P1A2: Studies on a Pro-Thrombotic Polymorphism

Principal Investigator: Paul F. Bray, M.D.

Agency: NIH/NHLBI

Type: RO1 (HL57488) 12/01/97 - 11/30/99 (till Dr. Bray left JHMI)

Total direct costs: \$747,216 % effort: 10

The major goal of this project was to characterize the functional consequences of a polymorphism on the $\alpha_{IIb}\beta_3$ platelet receptor as a risk factor for coronary artery thrombotic events.

Free Radical Generation by Vascular Endothelial Cells in Response to Shear Stress

Principal Investigator: B. Rita Alevriadou, Ph.D.

Agency: The Whitaker Foundation

Type: Research Grant (4th year extension) 12/01/98 - 11/30/99

Total direct costs: \$58,333

% effort: 33

The goal was to study the dynamic changes in intracellular ROS concentrations in cultured vascular ECs under different levels of steady laminar shear stress and shear stress gradients, and identify ROS sources.

Balance of Endothelial-Derived Free Radicals under Flow and in the Presence of Blood Substitutes

Principal Investigator: B. Rita Alevriadou, Ph.D.

Agency: The Eugene and Mary B. Meyer Center for Advanced Transfusion Practices and Blood Research

Type: Research Grant 01/01/00 - 12/31/01

Total direct costs: \$75,000

% effort: 10

The goal of this project is to determine the extent of activation of cultured vascular ECs exposed to different concentrations/forms of hemoglobin-based blood substitutes and other oxidant-generating compounds.

PEER-REVIEWED PUBLICATIONS:

1. B.R. Alevriadou, A. Lasslo and L.V. McIntire, "Inhibition of platelet adhesion and thrombus formation on a collagen-coated surface by novel carbamoylpiperidine antiplatelet agents", *Biochim Biophys Acta* 1137:279-286, 1992.
2. B.R. Alevriadou, S.G. Eskin, L.V. McIntire and W.P. Schilling, "Effect of shear stress on $^{86}\text{Rb}^+$ efflux of calf pulmonary artery endothelial cells", *Ann Biomed Eng* 21:1-7, 1993.
3. B.R. Alevriadou, J.L. Moake, N.A. Turner, Z.M. Ruggeri, B.J. Folie, M.D. Phillips, A.B. Schreiber, M.E. Hrinda and L.V. McIntire, "Real-time analysis of shear-dependent thrombus formation and its blockade by inhibitors of von Willebrand factor binding to platelets", *Blood* 81:1263-1276, 1993.
4. T.C. Huang, D.A. Graham, L.D. Nelson and B.R. Alevriadou, "Fibrinolytic agents inhibit platelet adhesion onto collagen type I-coated surfaces at high flow conditions", *Blood Coag Fibrinol* 9:213-226, 1998.
5. D.A. Graham, T.C. Huang, B.A. Keyt and B.R. Alevriadou, "Real-time measurement of lysis of mural platelet deposits by fibrinolytic agents under arterial flow", *Ann Biomed Eng* 26:712-724, 1998.
6. L.H. Yeh, Y.J. Park, R.J. Hansalia, I.S. Ahmed, S.S. Deshpande, P.J. Goldschmidt-Clermont, K. Irani and B.R. Alevriadou, "Shear-induced tyrosine phosphorylation in endothelial cells requires Rac1-dependent production of reactive oxygen species", *Am J Physiol* 276:C838-C847, 1999.
7. D.K. Zablocki, J.J. Rade and B.R. Alevriadou, "Adenovirus-mediated expression of tissue plasminogen activator does not alter endothelial cell proliferation and invasion", *In Vitro Cell Dev Biol* 36(10):625-8, 2000.
8. M.T. Hinds, Y.J. Park, S.A. Jones, D.P. Giddens and B.R. Alevriadou, "Local hemodynamics affect monocytic cell adhesion to a three-dimensional flow model coated with E-selectin", *J Biomech* 34:95-103, 2001.
9. T.C. Huang, R.E. Jordan, R.R. Hantgan and B.R. Alevriadou, "Differential effects of c7E3 Fab on thrombus formation and rt-PA-mediated thrombolysis under flow conditions", *Thromb Res* 102(5):411-25, 2001.
10. L.H. Yeh, A.M. Kinsey, S. Chatterjee and B.R. Alevriadou, "Lactosylceramide mediates shear-induced endothelial superoxide production and intercellular adhesion molecule-1 expression", *J Vasc Res* 38(6):551-9, 2001.
11. D.M. Wootton, A.S. Popel and B.R. Alevriadou, "An experimental and theoretical study on the dissolution of mural fibrin clots by tissue-type plasminogen activator", *Biotechnol Bioeng* 77(4):405-19, 2002.

12. C.K.D. Ng, S.S. Deshpande, K. Irani and B.R. Alevriadou, "Adhesion of flowing monocytes to hypoxia/reoxygenation-exposed endothelial cells: role of Rac1, ROS and VCAM-1", *Am J Physiol* 283:C93-C102, 2002.
13. K.V. Vijayan, T.C. Huang, Y. Liu, A. Bernardo, J.F. Dong, P.J. Goldschmidt-Clermont, B.R. Alevriadou and P.F. Bray, "Shear stress augments the enhanced adhesive phenotype of cells expressing the Pro33 isoform of integrin β_3 ", *FEBS Lett* 540:41-6, 2003.
14. B.R. Alevriadou, "CAMs and Rho small GTPases: gatekeepers for leukocyte transendothelial migration. Focus on: VCAM-1-mediated Rac signaling controls endothelial cell-cell contacts and leukocyte transmigration", *Am J Physiol* 285: C250-2, 2003.
15. J.B. Haun, W.M. Baldwin III and B.R. Alevriadou, "Clearance of complement by human vascular endothelial cells: Effects of hypoxia/reoxygenation and IL-1 β activation", *J Leukoc Biol* submitted.
16. S.F. Martin, S. Chatterjee and B.R. Alevriadou, "Rac1 inhibition protects against hypoxia/reoxygenation-induced lipid peroxidation in cultured vascular endothelial cells", in preparation.

BOOK CHAPTERS:

1. B.R. Alevriadou and L.V. McIntire, "Rheology" In: J. Loscalzo, A.I. Schafer, eds. *Thrombosis and Hemorrhage*. Boston: Blackwell Scientific Publications, pp. 369-381, 1994.
2. J.M. Ross, B.R. Alevriadou and L.V. McIntire, "Rheology" In: J. Loscalzo, A.I. Schafer, eds. *Thrombosis and Hemorrhage*. 2nd ed., Baltimore: Williams & Wilkins, pp. 405-421, 1998.

PRESENTATIONS:

Invited Presentations:

"Effect of blood flow on the efficacy of the fibrinolytic agent rt-PA", Department of Chemical & Biochemical Engineering, University of Maryland Baltimore County, Catonsville, MD, October 1995.

"Hemodynamic effects on blood cells and vascular cells", Pulmonary Division, Department of Medicine, JHU School of Medicine, October 1996.

"Effect of hemodynamic forces on signal transduction in vascular endothelial cells", Lipid Research Atherosclerosis Division, Department of Pediatrics, JHU School of Medicine, April 1998.

"Reactive oxygen species are involved in the signal transduction of fluid shear stress in cultured vascular endothelial cells", invited by the National Science Foundation, The 5th Japan-USA-Singapore-China Conference on Biomechanics, Sendai, Japan, August 1998.

"The role of shear stress and oxidative stress in endothelial cell signaling and expression of leukocyte adhesion receptors", The Eugene and Mary B. Meyer Center for Advanced Transfusion Practices and Blood Research, JHMI, April 2001.

"The role of shear stress and oxidative stress in endothelial cell signaling and expression of leukocyte adhesion receptors", Division of Immunology, Department of Pathology, JHU School of Medicine, April 2001.

"Fluid mechanical shear stress modulates vascular endothelial cell intracellular signaling", Lipid Research Atherosclerosis Division, Department of Pediatrics, JHU School of Medicine, February 2002.

"Flow-induced shear stress modulates vascular endothelial cell intracellular signaling, inflammation and thrombus formation/lysis",

Biomedical Engineering Department, Illinois Institute of Technology, Chicago, IL, April 2002

Biomedical Engineering Department, University of Virginia, Charlottesville, VA, July 2002

Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, November 2002

Biomedical Engineering Department, University of Miami, Coral Gables, FL, December 2002

Biomedical Engineering Department, Rutgers University, Piscataway, NJ, February 2003

Biomedical Engineering Department, University of North Carolina at Chapel Hill, NC, March 2003

Biomedical Engineering Program, University of Memphis/University of Tennessee, Memphis, TN, June 2003

Biomedical Engineering Center and Heart & Lung Research Institute, Ohio State University, OH, July 2003

Other Presentations:

1. B.R. Alevriadou, L.V. McIntire and A. Lasslo, "Mural thrombus formation on collagen-coated surfaces in the presence of antiplatelet agents and inhibitors of thrombin", Annual Conference on Biomedical Engineering Research in Houston, February 1991 (Houston, TX).
2. B.R. Alevriadou, M. Mo, D.S. Rickman, S.G. Eskin, L.V. McIntire and W.P. Schilling, "Effect of shear stress on $^{86}\text{Rb}^+$ efflux and cytosolic Ca^{2+} of calf pulmonary artery endothelial cells", Annual Meeting of the Federation of American Societies for Experimental Biology (FASEB), April 1991 (Atlanta, GA).
3. L.V. McIntire, B.R. Alevriadou, J.L. Moake and Z.M. Ruggeri, "Platelet surface glycoprotein Ib binding site of von Willebrand factor mediates platelet adhesion to collagen under flow conditions", BMES Annual Meeting, October 1991 (Charlottesville, VA).
4. B.R. Alevriadou, J.L. Moake, Z.M. Ruggeri, N.A. Turner, L.V. McIntire and M.D. Phillips, "A recombinant vWF fragment and aurin tricarboxylic acid both inhibit the vWF binding to glycoprotein Ib that is required for platelet adhesion to collagen under flow conditions", American Heart Association Annual Meeting, November 1991 (Anaheim, CA).
5. B.R. Alevriadou, J.L. Moake, Z.M. Ruggeri and L.V. McIntire, "Platelet surface glycoprotein Ib binding site of von Willebrand factor mediates platelet adhesion to collagen under flow conditions", AIChE Annual Meeting, November 1991 (Los Angeles, CA).
6. N.A. Turner, J.L. Moake, Z.M. Ruggeri, B.R. Alevriadou, L.V. McIntire and M.D. Phillips, "Porcine heparin reverses the inhibitory effect of a recombinant vWF fragment, but not of aurin tricarboxylic acid, on shear-induced vWF-mediated platelet aggregation", American Society of Hematology Annual Meeting, December 1991 (Denver, CO).
7. B.R. Alevriadou, J. Ware and Z.M. Ruggeri, "Use of laser scanning confocal microscopy to evaluate platelet thrombus formation in flowing blood", BMES Annual Meeting, October 1993 (St. Louis, MO).
8. B.R. Alevriadou, J. Dent, R. McClintock, J. Ware and Z.M. Ruggeri, "Inhibition of platelet thrombus formation in flowing blood by von Willebrand factor and GP Ib antagonists", AIChE Annual Meeting, November 1993 (Memphis, TN).
9. T.C. Huang and B.R. Alevriadou, "Effect of fibrinolytic agents on platelet thrombus formation in an in vitro perfusion system", ASME/AIChE/ASCE/BMES Summer Bioengineering Conference, June-July 1995 (Beaver Creek, CO).
10. D.A. Graham, T.C. Huang and B.R. Alevriadou, "Effect of blood flow on the in vitro properties of rt-PA", Experimental Biology Annual Meeting, April 1996 (Washington, DC).
11. Y.J. Park, R.J. Hansalia, P.J. Goldschmidt-Clermont and B.R. Alevriadou, " 17β -estradiol uncovers tyrosine phosphorylation of pp60^{src} in endothelial cells exposed to arterial shear stress", BMES Annual Meeting, October 1996 (University Park, PA).
12. B.R. Alevriadou, T.C. Huang and D.A. Graham, "TNK reveals enhanced fibrinolytic potential and less systemic side effects than rt-PA in an in vitro whole blood arterial reperfusion system", Experimental Biology Annual Meeting, April 1997 (New Orleans, LA).

13. B.R. Alevriadou, D.A. Graham and T.C. Huang, "Quantitation of thrombosis, fibrinolysis and fibrinogenolysis with SK, UK, rt-PA and TNK in flowing blood", ASME/AICHe/ASCE/BMES Summer Bioengineering Conference, June 1997 (Sun River, OR).
14. Y.J. Park, L.H. Yeh, P.J. Goldschmidt-Clermont, K. Irani and B.R. Alevriadou, "Shear-induced tyrosine phosphorylation in vascular endothelial cells requires Rac1-dependent production of reactive oxygen species", Vascular Biology Annual Meeting, April 1998 (San Francisco, CA).
15. M.T. Hinds, S.A. Jones, B.R. Alevriadou and D.P. Giddens, "Effect of pulsatile flow on monocytic cell adhesion to E-selectin-coated surfaces of a three-dimensional perfusion model", ASME Annual Meeting, November 1998 (Anaheim, CA).
16. M.T. Hinds, S.A. Jones, B.R. Alevriadou and D.P. Giddens, "Hemodynamic wall shear stress affects monocytic cell adhesion to an E-selectin-coated flow model", BMES Annual Meeting, October 1998 (Cleveland, OH).
17. T.C. Huang, R.E. Jordan, R.R. Hantgan and B.R. Alevriadou, "Effects of an anti-GP IIb-IIIa Fab fragment on platelet adhesion to fibrin under static and flow conditions", BMES Annual Meeting, October 1998 (Cleveland, OH).
18. L.H. Yeh, Y.J. Park, E.A. Lipke, P.J. Goldschmidt, K. Irani and B.R. Alevriadou, "Effect of radical scavengers on shear-induced signal transduction in vascular endothelial cells", BMES Annual Meeting, October 1998 (Cleveland, OH).
19. D.M. Wootton, A.S. Popel and B.R. Alevriadou, "A model of lysis of mural platelet-fibrin thrombi", BMES Annual Meeting, October 1999 (Atlanta, GA).
20. T.C. Huang, R.E. Jordan, R.R. Hantgan and B.R. Alevriadou, "The role of GP IIb/IIIa inhibitors on the fibrinolytic resistance of platelet-fibrin thrombi", BMES Annual Meeting, October 1999 (Atlanta, GA).
21. V.K. Vijayan, T.C. Huang, B.R. Alevriadou, P.J. Goldschmidt-Clermont and P.F. Bray, "Compared to PI^{A1}, the PI^{A2} polymorphism of integrin β_3 augments outside-in signaling and shear amplifies the greater PI^{A2} adhesion", American Society of Hematology Annual Meeting, December 1999 (New Orleans, LA).
22. C.K.D. Ng, K. Irani and B.R. Alevriadou, "Increased adherence of flowing monocytes to cultured endothelial cells after hypoxia/reoxygenation: Involvement of Rac-1, ROS and VCAM-1", BMES Annual Meeting, October 2000 (Seattle, WA).
23. L.H. Yeh, A.M. Kinsey, S. Chatterjee and B.R. Alevriadou, "Lactosylceramide mediates the shear-induced superoxide production in vascular endothelial cells", BMES Annual Meeting, October 2000 (Seattle, WA).
24. B.R. Alevriadou, R.R. Hantgan, R.E. Jordan and T.C. Huang, "Differential effects of c7E3 Fab on thrombus formation and rt-PA-mediated thrombolysis under flow", BMES Annual Meeting, October 2001 (Durham, NC).
25. J.B. Haun, W.M. Baldwin III and B.R. Alevriadou, "Role of complement activation on the recruitment of leukocytes/platelets by vascular endothelial cells", BMES Annual Meeting, October 2001 (Durham, NC).
26. S.F. Martin and B.R. Alevriadou, "Oxidative stress and lipid peroxidation due to endothelial cell exposure to fluid shear stress", BMES Annual Meeting, October 2002 (Houston, TX).
27. B.R. Alevriadou, T.C. Huang, K.V. Vijayan and P.F. Bray, "Consequences of the Leu33Pro polymorphism on cell adhesion to fibrinogen and other $\alpha_{IIb}\beta_3$ ligands", BMES Annual Meeting, October 2003 (Nashville, TN).

COURSES TAUGHT AT JHU:

580.461 Fall (odd years) **BIOLOGICAL TRANSPORT** (co-taught with Dr. A.S. Popel)

Fundamentals of advanced mass transfer with applications to biological and biomedical systems.

Topics covered by B. Rita Alevriadou: Steady and unsteady-state molecular diffusion, simultaneous momentum and mass transfer, and mass transport with chemical reaction. Emphasis is placed on: physical and flow properties of blood, tissue oxygen transport, artificial organs, extracorporeal devices, and pharmacokinetic models.

580.437 and 580.637 Fall (even years) **CELLULAR & TISSUE ENGINEERING**

(with specific lectures by Drs. K.W. Leong, S.C. Kuo and A.S. Popel)

The “Cellular Engineering” part of the course focuses on the latest research developments in:

Experimental and theoretical tools to investigate cell-matrix (extracellular or polymer) and cell-cell adhesion mechanisms. Mechanisms of cell motility. Signal transduction of mammalian cells exposed to physical forces. Mechanical properties of cells.

580.423 Fall (all years) **LABORATORY IN PHYSIOLOGICAL FOUNDATIONS FOR BME I**

(each faculty designs and supervises a laboratory exercise for junior BME students that lasts 3 weeks)

Title of laboratory exercise: “Purification and characterization of the milk protein α -lactalbumin by SDS-PAGE electrophoresis”. Instructor: B. Rita Alevriadou

STUDENTS/FELLOWS SUPERVISED:

- | | |
|---------------------------|---|
| Dionne A. Graham, M.S. | “Thrombolysis by rt-PA and its Analogs in the Presence of Fibrin”, M.S. Thesis, 1994-1996 (currently: Ph.D. candidate at Harvard Medical School, Department of Biostatistics). |
| Young J. Park, M.S. | “Effect of Shear Stress and Estrogen on Protein Tyrosine Phosphorylation in Vascular Endothelial Cells”, M.S. Thesis, 1995-1997 (after Georgetown University Law School, currently: Attorney). |
| Monica T. Hinds, Ph.D. | “The Role of Local Hemodynamics on Monocytic Cell Adhesion to E-Selectin-Coated Surfaces of a 3-D Perfusion Model”, Ph.D. Thesis (co-advised with Dr. Don P. Giddens), 1996-1998 (currently: Assistant Professor, Department of Biomedical Engineering, Oregon Health & Science University, Beaverton, OR). |
| Daniela K. Zablocki, M.S. | “Adenoviral-Mediated t-PA Gene Transfer and its Effects on Vascular Endothelial Cell Proliferation and Invasion”, M.S. Thesis, 1997-1999 (currently: Staff, Picower Research Institute, NY). |
| Trevor C. Huang, Ph.D. | “Lysis of Mural Platelet-Fibrin Thrombi by a Combination of Fibrinolytic and Antiplatelet Agents under Flow Conditions”, Ph.D. Thesis, 1994-2000 (currently: Sr. Scientist, Medtronic, Inc., Medtronic Perfusion Systems, Brooklyn Park, MN). |
| Li-Hong (Paul) Yeh, Ph.D. | “Endothelial Mechanotransduction: Role of Endogenous Reactive Oxygen Species in Shear-Induced Cellular, and MAP Kinase, Tyrosine Phosphorylation and ICAM-1 Expression”, Postdoctoral Fellowship, 1997-2000 (currently: Sr. Staff Fellow, FDA, Rockville, MD). |
| David M. Wootton, Ph.D. | “Numerical and Experimental Models of Lysis of Mural Fibrin-Platelet Thrombi under Flow”, Postdoctoral Fellowship, 1998-2000 (currently: Assistant Professor, Department of Mechanical Engineering, Drexel University, Philadelphia, PA). |
| Chi-Kin Domingos Ng, M.S. | “Molecular Mechanisms of Leukocyte Adhesion to Hypoxic/Reoxygenated Vascular Endothelial Cells”, M.S. Thesis, 1998-2000 (currently: Staff, COR Therapeutics, Inc., San Francisco, CA). |

- Jered B. Haun, M.S. “Role of the Complement Cascade on Vascular Endothelial Cell Activation and Leukocyte Recruitment”, M.S. Thesis, 2000-2002 (currently: Ph.D. candidate at the Department of Bioengineering, University of Pennsylvania, Philadelphia, PA).
- Sergio F. Martin-Gonzalez, Ph.D. “Effect of Shear-Induced Oxidative Stress on Lipid Peroxidation in Vascular Endothelial Cells”, Postdoctoral Fellowship, 2001-2003 (currently: Research Associate, Madrid, Spain).

UNDERGRADUATE STUDENTS SUPERVISED:

- Riple J. Hansalia, B.S. '97 (currently: Medical School, University of Maryland)
Imraan S. Ahmed, B.S. '98 (currently: Medical School, NYU)
Elizabeth A. Lipke, B.S. '99 (currently: Graduate School, Rice BME)
Adam M. Kinsey, B.S. '01 (currently: Graduate School, Berkeley BME)

REFERENCES:

Available upon request.